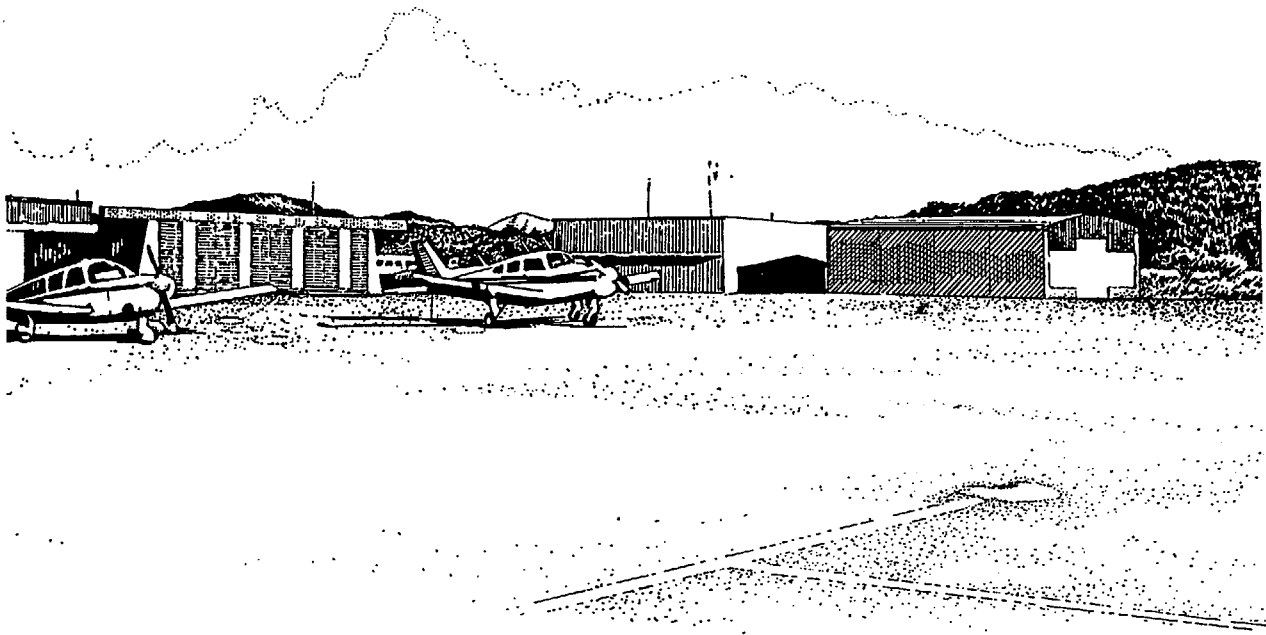


Chapter One INVENTORY

H.A. Clark Memorial Field



Chapter One INVENTORY

H.A. Clark Memorial Field

The development of a Master Plan for H.A. Clark Memorial Field required the collection and evaluation of various data related to the airport, the community, and the surrounding area. This information included the following.

- > Physical inventories and descriptions of facilities available and services provided at the airport.
- > Background information pertaining to the airport, Coconino County, the City of Williams and the surrounding region.
- > Historical population and other socioeconomic statistics and projections which help provide an indication of future development in the region.
- > A comprehensive review of the existing local and regional plans and studies to determine their potential influence on

the development of the airport and implementation of the Airport Master Plan.

An accurate and complete inventory is essential to the success of a master plan study. The conclusions, findings and recommendations made in the master plan are dependent on the information collected during the study. Therefore, the data concerning conditions on and around the airport must be as reliable and current as possible.

The information acquired during the inventory phase was obtained through on-site investigations of the airport, interviews with airport users and representatives from the City of Williams and Coconino County. Information was also obtained from historical records and available documents and studies concerning the local community and the airport.

AIRPORT SETTING

The City of Williams, founded in 1880, is located in the north central portion of Arizona, approximately 35 miles west of Flagstaff and 110 miles east of Kingman. The City of Williams is easily accessible off Interstate 40, which crosses northern Arizona. H.A. Clark Memorial Field is located approximately three miles north of the City, on Airport Road. Exhibit 1A illustrates the location of H.A. Clark Memorial Field in its regional setting.

AIRPORT DEVELOPMENT HISTORY

Originally founded by a group of businessmen with a Special Use Permit from the Kaibab National Forest, Williams Municipal Airport has served the community since 1941. At that time the airport consisted of a dirt runway and aircraft parking area.

During World War II, the airport served as a training location for pilots in the armed services. After the war, the airport remained to serve the surrounding area.

On August 13, 1948, the Kaibab National Forest Service conveyed 403 acres to the City of Williams under the Federal Airport Act. Between 1947 and 1949, construction of a new runway was initiated. Due to lack of funding, this runway was not completed and was only available for emergency purposes.

In 1959, the City of Williams obtained a Special Use Permit from the Forest Service for an additional 15 acres for safety area protection.

In 1968, the City of Williams released approximately 99.8 acres back to the Forest

Service. According to the original Special Use Permit, the land would be developed or released back to the Forest Service.

During the 1960's, the City obtained state and federal funding to pave Runway 02-20 and install runway lighting. In addition, construction of an aircraft parking apron was funded during the 1970's. Additional apron work was completed in the early 1980's.

During the mid 1980's, Runway 18-36 was paved to a length of 6,000 feet. During construction, runway lighting was installed.

The City of Williams officially changed the name of the airport in July of 1992, from Williams Municipal Airport to H.A. Clark Memorial Field. The airport was so named after Hubert A. Clark, the first resident in the Williams area to support aviation.

EXISTING AIRPORT FACILITIES

This section provides both a narrative description and an illustration of airport facilities at H.A. Clark Memorial Field. Airport facilities are generally classified as either *airside* or *landside*. Exhibit 1B illustrates the layout of the existing airport facilities at H.A. Clark Memorial Field.

AIRSIDE FACILITIES

Airside facilities are those that are directly associated with aircraft operating to and from the airport. Runways, taxiways, navigational aids, and airport lighting are examples of airside facilities. The existing airside facilities at H.A. Clark Memorial Field are described in the following paragraphs.

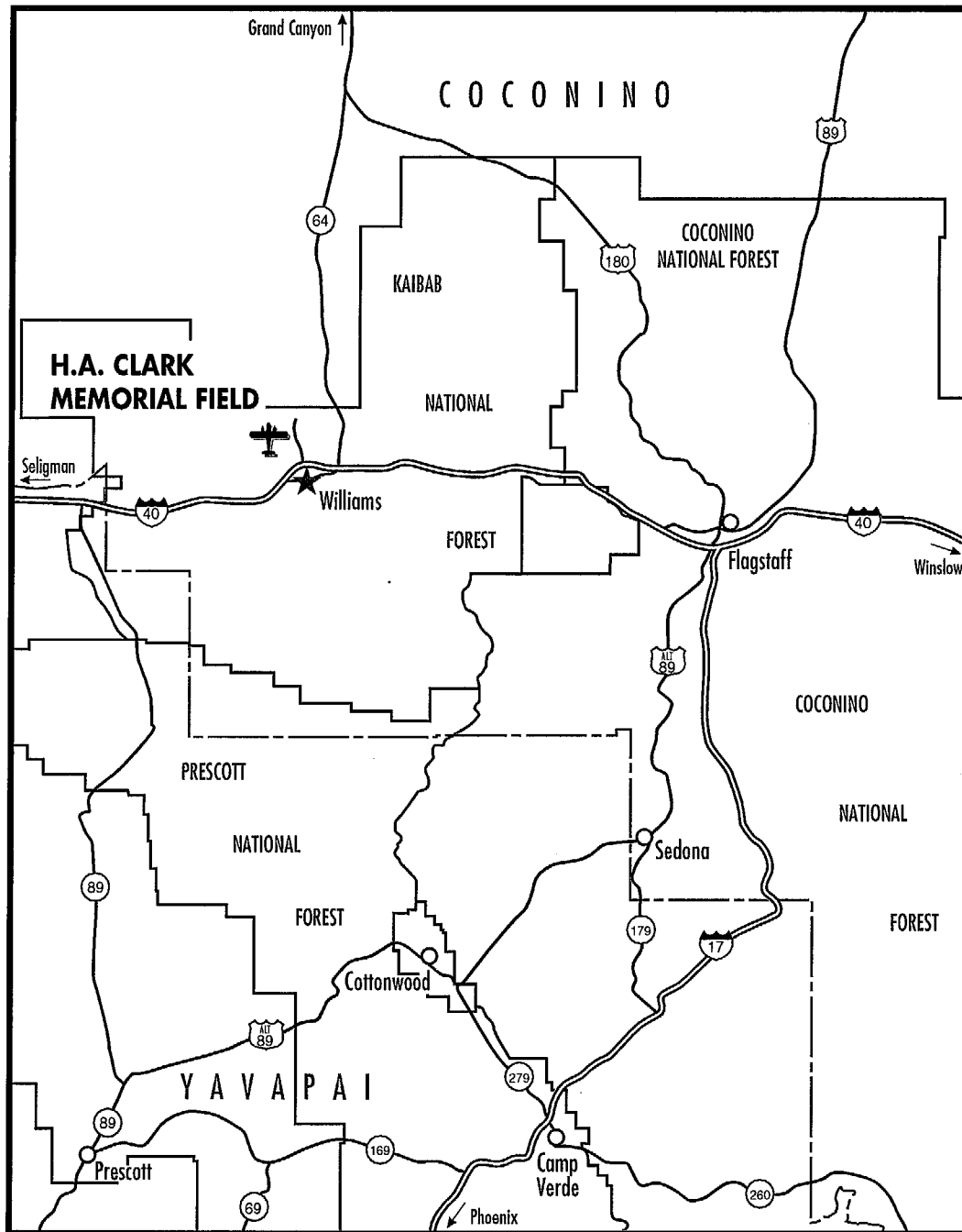
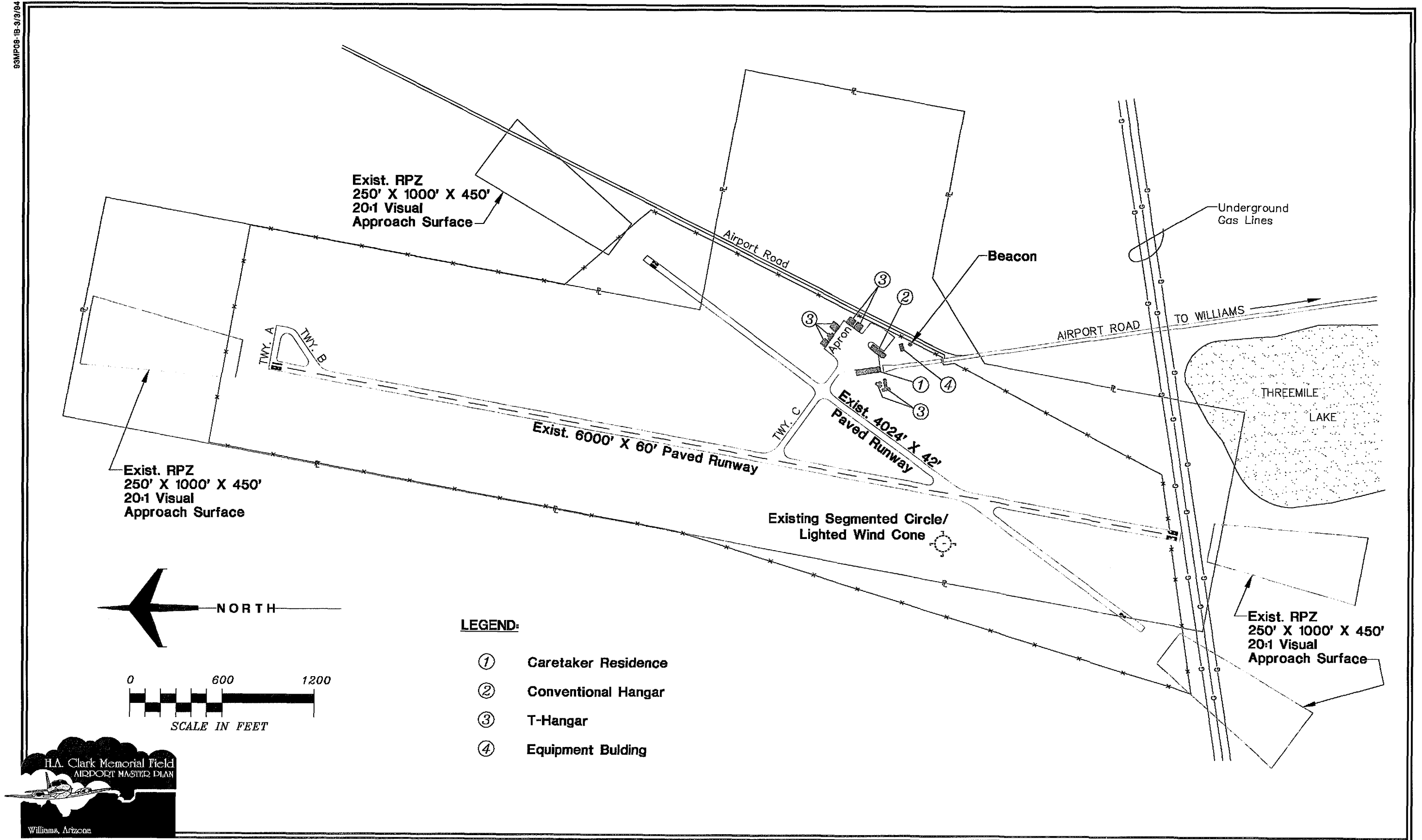


Exhibit 1A
VICINITY MAP



Runways

H.A. Clark Memorial Field, at an elevation of 6,680 feet mean sea level (MSL), has two paved runways: one oriented north to south and designated as Runway 18-36 and the other oriented north-northeast-south-southwest designated Runway 02-20. Runway 18-36, the primary runway, is approximately 6,000 feet in length and 60 feet in width and is in good condition. Runway 02-20 is approximately 4,250 feet in length at a width of approximately 42 feet, and is in poor condition.

Taxiways

Taxiways are provided to facilitate aircraft movement between the runway and the aircraft parking area. There is one paved taxiway at H.A. Clark Memorial Field which connects the runways to the aircraft parking facilities on the southeast side of the airport. This taxiway is approximately 700 feet in length and varies in width from 25 to 35 feet. In addition, an aircraft turn-around is provided at the approach end of Runway 18.

Under a grant from the Federal Aviation Administration, the City of Williams recently designed a parallel taxiway for Runway 18-36. The grant also included funding to construct this taxiway.

Navigational Aids

Navigational aids (navaids) provide direction, range, and position information to pilots. Navaids are usually classified as either enroute or terminal navaids. The enroute navaids provide point-to-point navigation while terminal navaids provide approach and landing guidance. Some

navaids can be used in both enroute and terminal roles.

There are no navaids at H.A. Clark Memorial Field, however, there are five primary navaids within the region: the Flagstaff Very High Frequency Omnidirectional Range (VOR), the Drake VOR, the Kingman VOR, the Peach Springs VOR, and the Grand Canyon VOR. The Flagstaff VOR is located 28 nautical miles (NM) east, while the Drake VOR is located 39 NM south. The Kingman VOR is located 87 NM west, the Peach Springs VOR is located 70 NM northwest, and Grand Canyon VOR is approximately 40 NM north.

Lighting

Medium Intensity Runway Lighting (MIRL) is available on Runway 18-36. The MIRL is a pilot-controlled lighting system. Portions of an inoperative lighting system are still in place on Runway 02-20. In addition, a lighted windcone is associated with the segmented circle located on the west side of the runway intersection.

LANDSIDE FACILITIES

Landside facilities primarily consist of those facilities required to accommodate aircraft or pilot and passengers while they are on the ground.

Tiedowns and Hangars

Existing landside development consists of 16 aircraft tiedowns and eight hangar facilities. Of the 16 tiedowns, 11 are located on the east side of the apron, four on the west side, and one on the south side.

Eight hangar facilities are located in the terminal area: three T-hangars and five small conventional hangars. Most of the buildings in the terminal area are in poor condition.

In addition, a trailer, which is currently occupied by the 24-hour airport caretaker, is located south of the 11 tiedowns.

Automobile Parking

No paved automobile parking spaces are available at H.A. Clark Memorial Field. Unpaved areas are available for parking automobiles near some of the hangar facilities.

AIRPORT SUPPORT FACILITIES

Airport support facilities are those that are not classified as airside or landside facilities, but do play an important role in the function of the airport. Airport access, available utilities, and maintenance equipment are support facilities described in the following paragraphs.

Airport Access

H.A. Clark Memorial Field is located approximately three miles north of the City and can be accessed by Airport Road. Airport Road is a two-lane paved road in good condition. Signage is provided to direct users to and from the airport.

Utilities

The availability of utilities at the airport is an important factor in determining the development potential of the airport property. Of primary concern in the

inventory investigation, is the availability of water, sanitary sewer, solid waste, and electricity. Some, if not all, of these utilities will be necessary for any future development. The City of Williams is served by the following utilities.

- > The City of Williams provides water service to H.A. Clark Memorial Field utilizing a water storage tank. The closest water line is approximately two miles south of the airport.
- > The City recently designed a fire protection delivery system to be operated from a new 250,000 gallon water storage tank. The system will include a 10-inch water line and will be designed to accommodate 2,000 gallons per minute at 65 pounds per square inch. In the short-term, this system will include four (4) fire-hydrants to be located in the existing apron area. Construction of these facilities is expected to be completed by the end of calendar year 1994.
- > Sanitary sewer is provided utilizing individual septic tank systems.
- > The Airport's solid waste is removed by the City's Sanitation Department.
- > Electrical power is supplied to the Williams area by the Arizona Public Service Company. The City of Williams owns the local distribution system, including those lines that serve the airport.

Maintenance Equipment

Currently, one piece of snow removal equipment is assigned to the airport. The equipment is a 2 1/2 ton pick-up truck with an attached snow plow. This equipment,

when needed, is operated by City of Williams personnel.

AIRSPACE AND AIR TRAFFIC CONTROL

An analysis of the airspace structure in the vicinity of H.A. Clark Memorial Field is necessary to determine the operational interaction among the various types of airspace and airspace users. Exhibit 1C illustrates the airspace structure around the Williams area.

As depicted on Exhibit 1C, H.A. Clark Memorial Field is located in a vast area of unconstrained airspace. The airspace and the other airports in the area are discussed in the paragraphs that follow.

REGIONAL AIRPORTS

There are five airports within 30 NM of H.A. Clark Memorial Field: two public and three private. The two public airports are Flagstaff-Pulliam Airport (FLG), approximately 28 NM east-southeast, and Valle Airport (40G), approximately 22 NM north. Flagstaff-Pulliam Airport provides a paved surface of 7,000 feet in length, and Valle provides a dirt surface of 4,000 feet in length. Commercial service is also provided at Flagstaff-Pulliam Airport.

The three private airports are Big Spring, approximately 29 NM south-southwest, Bar Heart, approximately 20 NM south, and Sunrise, 14 NM east-southeast. Sunrise has a paved surface with a length of 3,200 feet, Big Spring has a dirt surface of 4,000 feet in length, and Bar Heart has a dirt surface of 2,400 feet in length.

AIRWAYS

Airway systems are normally used by those aircraft traveling between airports. The airway systems are marked on aeronautical charts with enroute navigational aids that assist pilots in controlling their aircraft along these routes. There are two airway systems: the **Low Altitude System** (Victor Airways), and the **High Altitude System** (Jet Routes). The Victor Airway System begins at 1,200 feet Above Ground Level (AGL) and extends upward to 18,000 feet MSL. The Jet Routes, layered above the Victor Airway System, begin at 18,000 feet MSL and extend upward to 45,000 feet MSL. There are no Jet Routes in the Williams area.

Two Victor Airways influence the H.A. Clark Memorial Field area, Victor V291 and V257. Victor V291, 1 NM mile south of H.A. Clark Memorial Field, is an airway segment between the Flagstaff VOR and the Peach Springs VOR. Victor V257, 12 NM west of the airport, is located between the Drake VOR and the BISOP Intersection.

SOCIOECONOMIC CHARACTERISTICS

A variety of historical and forecast socioeconomic information related to the Williams area and Coconino County was used in various elements of the Master Plan process. This information can be valuable in determining aviation service level requirements, as well as forecasting future aviation activity. The aviation forecast is normally directly related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period of time. These data provide valuable insight into the characteristics of the community

and how these characteristics will effect aviation demand.

POPULATION

An analysis of population growth in the Williams area was obtained from the

Arizona Department of Economic Security (ADES). The data obtained were analyzed for Williams, Coconino County, and the State of Arizona. Table 1A depicts the historical population trends and average annual growth rates for these areas.

TABLE 1A Historical Population Growth			
Year	City of Williams	Coconino County	State of Arizona
1960	3,559	41,857	1,321,000
1970	2,386	48,326	1,795,000
1980	2,266	75,008	2,729,450
1990	2,532	96,591	3,714,300
Average Annual Growth Rate (1980-1990)	1.12%	2.56%	3.13%
SOURCES: Bureau of the Census, U.S. Department of Commerce, Arizona Department of Economic Security.			

ECONOMY AND EMPLOYMENT

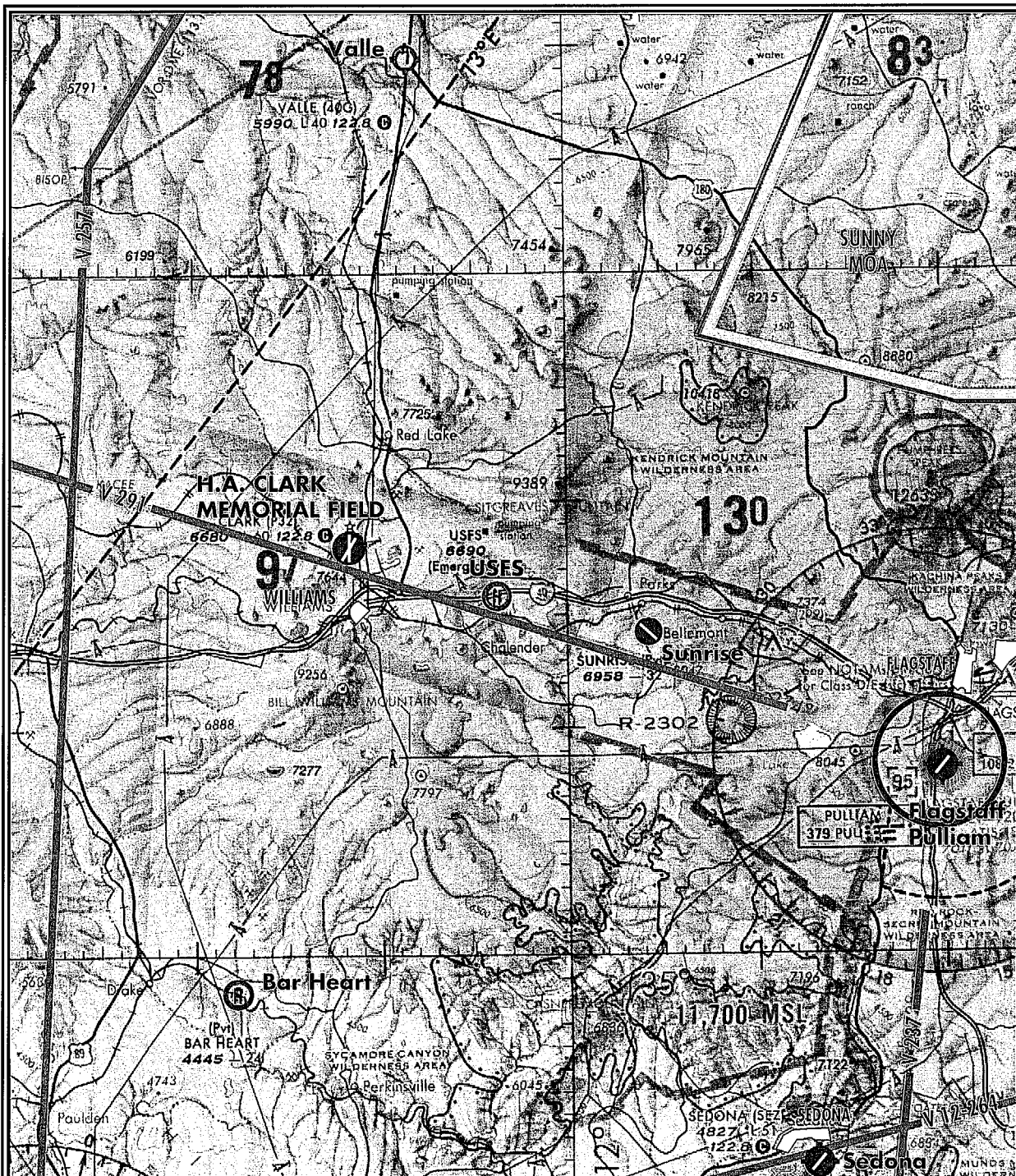
Motels, restaurants, and service stations provide the main sources of community income to City of Williams residents, while adjacent ski facilities also provide an important tourist attraction during the winter months. Located only 59 miles north, the Grand Canyon National Park attracts nearly three million visitors annually, making the tourist trade a major segment of the Williams economy.

The Grand Canyon Railway, Inc., based in Williams, Arizona, currently provides passenger rail service using historic railroad

equipment from Williams, Arizona to the train depot within Grand Canyon Village, Grand Canyon National Park. The Williams to Grand Canyon passenger rail service was reinitiated in 1989. Ridership for 1993 totaled 107,000 people.

The U.S. Forest Service, cattle and sheep ranching, farming and rock quarrying also contribute to the overall economy of the Williams area.

Table 1B provides the employment structure for the Williams area. The Retail Trade and Services categories comprise over half of the area's employment.



H.A. Clark Memorial Field
AIRPORT MASTER PLAN

Williams, Arizona

LEGEND:

<ul style="list-style-type: none"> Airports with Hard Surface Runways Other than Hard Surface Runways Private Heliport 	<ul style="list-style-type: none"> Class D Airspace Victor Airways MOA-Military Operations Area Non-Directional Radio Beacon
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NORTH

TABLE 1B
Employment Structure
Williams, Arizona

Economic Sector	Percent of Total
Agriculture & Mining	12.7%
Construction	7.5%
Manufacturing	6.7%
TCPU	9.9%
Wholesale Trade	1.5%
Retail Trade	25.8%
FIRE	1.2%
Services & Miscellaneous	25.1%
Public Administration	9.8%

NOTES: TCPU-Transportation, Communication & Public Utilities
 FIRE-Finance, Insurance & Real Estate
 SOURCE: Arizona Department of Economic Security, January 1992

EXISTING LAND USE

H.A. Clark Memorial Field is located within the jurisdiction of the City of Williams within Coconino County. The area surrounding the airport is part of Kaibab National Forest, under the jurisdiction of the U.S. Forest Service.

The closest residential development is located approximately two miles south of the airport. In addition, a residence is located approximately three miles east of the airport. Camp Civitan, a camp for the handicapped, is located approximately two miles east.

CLIMATE

Weather conditions play an important role in the planning and development of an airport. Temperature, wind speed and wind direction are important factors in determining runway length and optimum runway orientation. The percentage of time

that visibility is impaired due to cloud coverage or other conditions is a major factor in determining the need for navigational aids and lighting. Table 1C provides the average monthly weather data for the City of Williams area based on a thirty year average.

An analysis of wind data at Grand Canyon National Airport, Kingman Airport and Flagstaff-Pulliam Airport resulted in the determination that the Flagstaff-Pulliam Airport wind data provided the best available representation of the probable wind conditions at H.A. Clark Memorial Field. The windrose illustrated in Exhibit 1D was constructed using wind data from Flagstaff-Pulliam Airport, 28 NM east.

According to users of H.A. Clark Memorial Field, prevailing winds are primarily out of the south-southwest, favoring the use of Runway 18. The wind patterns and frontal movements passing over mountains occasionally disturb the flow of air and it is not uncommon to see wind speeds in

TABLE 1C
Weather Summary
Williams, Arizona

Month	Average Temperature (°F)		Average Total Precipitation (Inches)
	Daily Maximum	Daily Minimum	
January	44.3	21.3	1.84
February	46.6	22.7	1.57
March	50.6	25.9	1.98
April	59.8	33.1	1.38
May	69.3	4.5	0.69
June	78.6	48.2	0.51
July	83.1	54.8	2.78
August	79.3	53.5	3.66
September	75.5	47.7	1.79
October	65.5	38.6	1.26
November	54.3	28.7	1.41
December	46.5	23.2	2.34
Year	62.8	36.5	21.21

NOTE: Average Total Snow, Sleet and Hail Annually: 75.8 inches (Based on a thirty year average).

SOURCE: Arizona Department of Commerce.

excess of 50 mph for short periods of time. This wind data will be used in a subsequent chapter to evaluate the existing runway orientation at H.A. Clark Memorial Field.

SUMMARY

This chapter has examined those factors and issues that will have the greatest effect on the future of H.A. Clark Memorial Field. The research and data collected for this inventory chapter provide the information necessary to perform various analyses

required in subsequent chapters of this report. It also provides the proper perspective from which to develop a realistic Master Plan that will meet the needs of both the City of Williams and Coconino County.

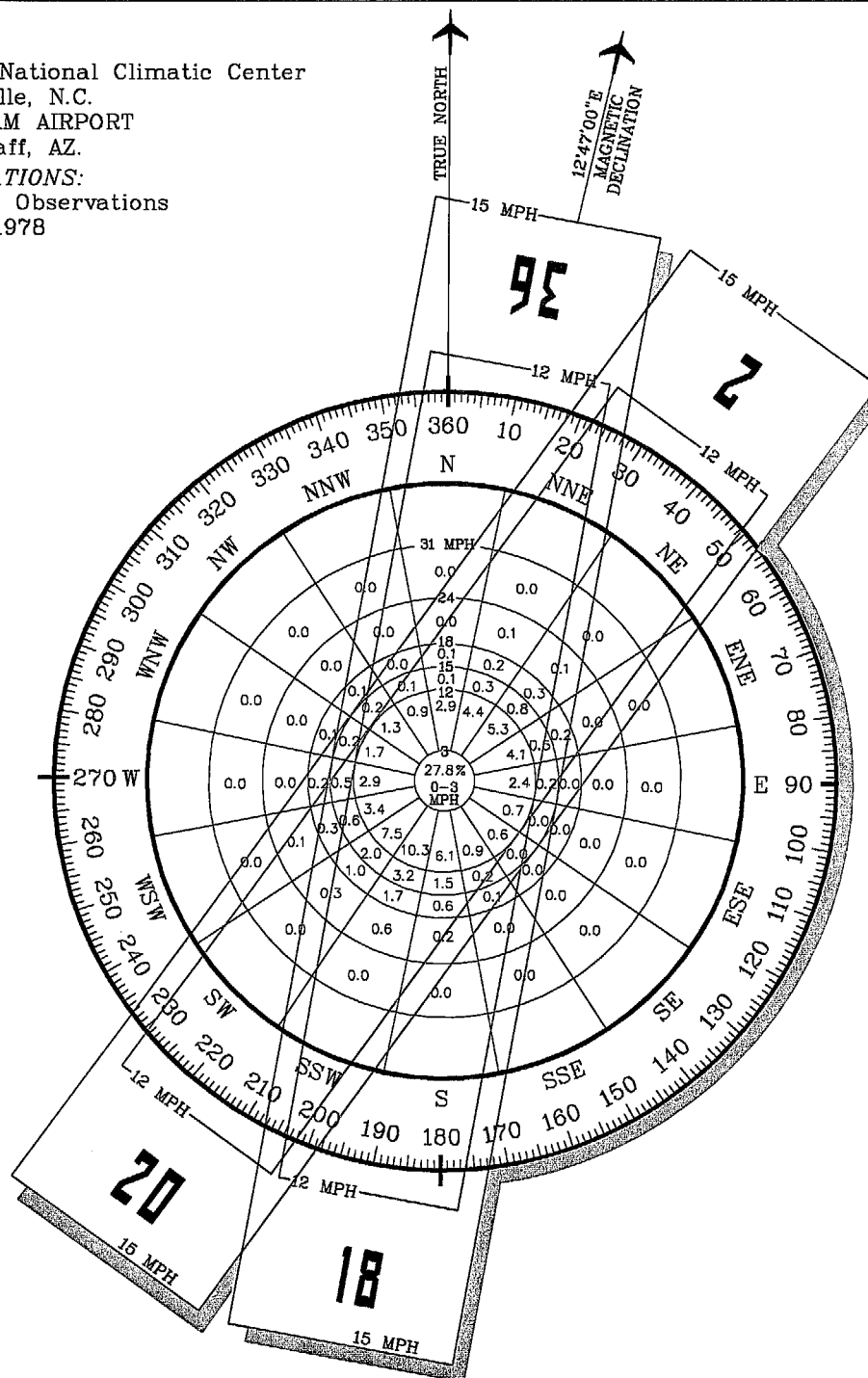
The next chapter will examine the current demand for aviation facilities and how these demands can be expected to change in the future. Projections of aviation activity through the year 2015 will be prepared in order to identify the necessary facilities required to meet this demand.

SOURCE:

NOAA National Climatic Center
Asheville, N.C.
PULLIAM AIRPORT
Flagstaff, AZ.

OBSERVATIONS:

46,546 Observations
1962-1978

**ALL WEATHER WIND COVERAGE**

	12 MPH	15 MPH
Runway 18-36	97.33%	99.49%
Runway 2-20	98.85%	99.10%

